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ABSTRACT

Empirical findings from reports appearing between 1949 and 1984 were studied to determine (1) whether research activities contribute to perceived effectiveness of classroom teaching and (2) to what extent good teaching and scholarly productivity contribute to salary improvements. Based on previous content analyses found in the literature search, a content analysis of the interpretation of findings was completed. Results indicated that predictability of perceived teaching effectiveness from a knowledge of scholarly activity is so small as to be useless in making individual decisions. In the settings studied, research productivity is a greater contribution to salary than is teaching effectiveness. While research activity does not appear to be a generally valid index of teaching effectiveness, publications generally do have a much larger influence on salary experience than does teaching. The paper concludes that making the rewards for effective teaching both convincingly greater and more directly apparent to prospective faculty apparently will be necessary if people are to be induced to attend directly to developing teaching as a marketable knowledge and skill. Presently, however, teaching adequately is necessary, but early publication success will have the most influence on salary advances in most institutional settings. (PN)

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Teaching and Research: Independent, Parallel, Unequal

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Teaching and Research: Independent, Parallel, Unequal

Abstract

Literature searches were made for reports of empirical research about the relationship of research productivity to perceived teaching effectiveness. Reports of the influences of these two academic performance factors on salary experience also were sought. A content analysis study was made of the interpretations made by the several writers of the findings from previous research and their own results.

Overall, research productivity is not directly predictive of student perceptions of teaching effectiveness. Writers have had considerable difficulty coping with empirical results that apparently varied with their views. Publications generally have had a much larger influence on salary experience than has teaching.

If one aspires to a professorial career, getting refereed articles published is very important. Teaching adequately is necessary but early publication success will have the most influence on salary advances in most institutional settings.

Teaching and Research: Independent, Parallel, Unequal

Does research activity contribute to perceived effectiveness of classroom teaching? Do good teaching and scholarly productivity contribute to salary improvements, and if so, equally? Empirical findings from reports appearing between 1949 and 1984 were studied for insight into these questions and related ideas and beliefs that writers appear to have held. The apparent meanings of the findings in aggregate also were studied.

Research Activity, Teaching Effectiveness, and Salary Influences

The first research about the contribution of scholarly activity to perceived teaching effectiveness apparently was done in the 1940s (Guthrie, 1949). At least 28 other studies of this relationship appeared through 1983. Not only were findings inconsistent across studies, they seem to have prompted various efforts to explain an apparently unexpected, ambiguous situation. These reports were contrasted with 12 in which both research and teaching were studied for influences on salary experience.

Major Variables in the Research/Teaching Studies

A brief summary of several variables helps set the stage. Findings related to these variables were widely different among studies, posing interpretation dilemmas for the writers. Thus the interpretations of the findings were made the focus of this study.

Teaching effectiveness. In the 29 studies, 25 involved some form of student evaluations, mostly of in-class experience. Three others used some form of faculty/administrative rating, and one used a composite of both.

Scholarly productivity. Quantification of this variable included colleague and/or administrative rating, various forms of publications activity, and grants involvement.

Sources of samples. Even more heterogeneity occurred in the faculty samples. Four had samples from one department at one institution. Three had samples from several institutions and departments. The others had samples from two or more departments at one institution.

Frumkin and Howell (1954) used an elaborate process to select two persons whose records then were compared. Because the study was weak in design (Linsky & Straus, 1975) and had ambiguously expressed findings, it was excluded from further analysis.

Sample size. Size of samples varied from under 30, omitting the one study based on two faculty, to almost 3,000; 20 of the 29 samples ranged between 32 and 382. The approximate median of sample size was 115. One sample was described only as "several hundred" (Guthrie, 1949, p. 112). The two smallest samples were taken from individual departments, while the three largest ones involved the multiple institution studies.

A Content Analysis Approach

As studies with empirical findings were winnowed from those in which assertions were declared but no new data or no data at all were cited, three distinct impressions developed. One was that fewer empirical studies had been done than discussion articles. Another was that the bulk of the studies revealed findings supporting a generalization that a very low but slightly positive correlation probably adequately describes the direct research/teaching relationship. The third impression, and the one ultimately followed in this study, was that interpretations of findings,

especially those aversive to views held by writers prior to doing the research, are more revealing, and perhaps more predictive of what people do, than the actual findings. Acting on this notion, a content analysis of the interpretations of findings was done. Content analysis discussions presented in Holsti (1969), Krippendorff (1980) and Weber (1985) were the basis to develop the procedures used in this study. The procedures adopted for this study appear to be within some current views about summarizing diverse research findings (Light & Pillemer, 1984).

Each of the 41 studies was read for the one or two sentences in which the principal findings were interpreted, whether alone or in the context of previously reviewed studies. For each of the 29 studies about the relationship of scholarly activity and perceived teaching effectiveness, and the 12 studies about the contribution of both to salary realized in academic appointments, the selected interpretive statement was placed into one of two categories. If the expression was 'matter of fact,' did not have qualifying words, was neutral, did not imply a future truth, and seemed to be 'writer comfortable,' the statement, and thus the study, was regarded as 'regular.' When the expression was deemed to be an over-statement of the results, as when a correlation coefficient less than 0.30 was described as 'moderate,' recognizing interpretation latitude for this statistic (Guilford and Fruchter, 1978), or when qualifying words were used to mitigate, downplay, or embellish a finding, the statement and the study were classed as 'irregular.'

Two persons independently read the 41 selected statements. They disagreed on the placement of four, all from the teaching/research set of 29. After a brief review, they agreed on the placement of these four

statements resulting in 13 teaching/research statements and 7 salary contribution statements being placed in the 'regular' cells. The others, 16 and 5 respectively, were classified in the 'irregular' cells.

29 Interpretations about Research Contributions to Teaching

For the question about research activity contribution to perceived teaching effectiveness, 55 per cent of the statements (16 of 29) were deemed 'irregular.' Space limitations precluded citing all 29 excerpts. A few selections classified as 'regular' are presented as comparative examples. More of the 'irregular' excerpts are cited because they are the statements of interest.

The following four statements are typical of those classed as 'regular' in the relationship of research activity to perceived teaching effectiveness. "Teaching effectiveness and scholarly-publication record were unrelated to each other" (Hoyt, 1974, p. 87). "We find little or no support for a relationship between teacher effectiveness and research involvement in these results" (Plant and Sawrey, 1970, p. 16). "The lack of a relationship between scholarship and teaching effectiveness is supported (Dent and Lewis, 1976, p. 10). "These results indicate that most of the rationales supporting the idea that engaging in scholarship fosters good teaching are invalid" (Friedrich & Michalak, 1983, p. 160). The other nine studies judged to fall in this category are Aleamoni and Yimer (1973), Chambers (1973), Grant (1971), Hayes (1971), Hoyt and Spangler (1976), Maslow and Zimmerman (1956), McDaniel and Feldhusen (1970), Rossman (1976), and Siegfried and White (1973b).

Four fully quoted statements were selected as examples of those judged as 'irregular' regarding research contribution to teaching. After

finding no significant association between research productivity and teaching effectiveness, Guthrie (1949) declared: "This was a matter of great surprise" (p. 112). Stallings and Singhal (1970) wrote, "The bulk of the data lend some support to the position that 'publication is not associated with poor teaching.' Conversely, these same data do not offer convincing proof that publication is related to good teaching" (p. 143). Referring to research and teaching, Linsky and Straus (1975) wrote, "Being good in one is certainly no bar to being good in the other respect" (p. 100). Centra (1983) declared, "The lack of consistent negative correlations between research productivity and teacher ratings in this and other studies indicates that performance as a scholar or researcher does not significantly detract from performance as a teacher "(p. 388).

Brief excerpts from other studies further display the difficulties of coping with discrepant findings:

> ". . . the superior faculty members are somewhat better teachers. . ." Woodburne, 1952, p. 381) [but] "There is only a little difference between the groups in . . . teaching effectiveness" (p. 381).
>
> ". . . the relationship that does exist may be trivial." "it is probably of little value" (Hicks, 1974, p. 144); [Research productivity] "certainly does not seem to interfere with effective teaching" (p. 145).
>
> [After finding mixed results] "In conclusion, the results of this study provide additional support to the notion that research and teaching are not separate and adversary phenomena. . ." (Rothman & Preshaw, 1975, p. 33).
>
> After declaring the correlation significant at .10 [but not at .05], Wood and DeLorme (1976) wrote, "it is deceiving to postulate a

significant and simple relationship between research and teaching effectiveness" (p. 79).

The other eight studies classed as being 'irregular' in relating research to teaching but not quoted from here, are Braunstein and Benston (1973), Bresler (1968) commented upon by Qureshi (1968), Frey (1978), Harry and Goldner (1972), Martin and Maynard (1975), Michalak and Friedrich (1981), Riley et al. (1950), and Voeks (1962).

12 Interpretations about Salary Influences

Findings about contributions of teaching and of research/writing to salary experience appear to have similar problems of interpretation. Five of the 11 statements (45 per cent) appeared to be 'irregular.' Two examples of regular interpretations about contributions to salary increases are these: "The analysis here suggests that while teaching is rewarded, research output and administrative experience are the principal routes to financial success" (Siegfried & White, 1973a, p. 315); "These data suggest that teaching is not rewarded in higher education, either in terms of base or supplemental income" (Marsh & Dillon, 1980, p. 552). The other five studies so classed are: Katz (1973), McLaughlin, et al. (1979), Rossman (1976), Tuckman (1979), and Tuckman, et al. (1977).

Two illustrations of 'irregular' statements about salary contribution follow. After finding that, "results suggest that the universities place little value on good teaching" (Tuckman and Hageman, 1976, p. 463), they also wrote, "However, the absence of a positive reward to outstanding teaching disappoints us" (p. 463). Hansen (1979) declared, "Perhaps most surprising was the finding that performance in the areas of teaching, research and service does not affect salary levels" (p. 1603A).

Three studies classed as 'irregular' in the discussion of research and teaching contributions to salary were not quoted. They are Hoyt (1974), Kasten (1984), and Koch and Chizmar (1973).

More About the Monetary Relationship. Hoyt (1974) reported a modest positive relationship between publication rate and salary increments and a smaller relationship of teaching effectiveness with salary increments. Rossman (1976) found publication to be correlated with salary at 0.65 (sig. .01), faculty nomination for teaching at 0.21 (sig. .05) and student appraisals of course and educational/personal development (r = 0.14 and 0.05, respectively) to have non-significant correlations (at .05).

In two reports, Siegfried and White (1973a, 1973b) presented findings based on 45 economics faculty at a university about the financial rewards associated with teaching and with writing for publication. Both teaching and research had a positive relationship to salary level (teaching was significant only at the .10 level). However, in estimated dollar amounts, improving research productivity was estimated to influence salary at a ratio about seven to one over teaching improvement of a similar magnitude. They concluded that an adequate performance is required in both areas and that, "while teaching is rewarded, research output and administrative experience are the principal routes to financial success" (1973a, p. 315).

Katz (1973) did a regression analysis of data from 596 faculty in 11 departments of one institution. Teaching quality was expressed as a dummy variable based on whether a faculty member was ranked in the upper or lower 50 per cent of all instructors as determined by student voting. Teaching was found to be, "... inconsequential in the reward

system, while publications are paramount" (p. 471). Siegfried and White (1978) transformed the teaching variable to emphasize the extremes and found teaching to be a significant determinant of academic salaries, at .10 (but not .05). However, numbers of publications, in three categories, and a dummy variable for administrative duties, all were significant at .01, as Katz had found. In both studies, the years of experience variable was significant at .01.

Hamovitch and Morgenstern (1975) also did a re-analysis of Katz's and other data. They found that years of experience have a considerable margin over publications as the major determiner of salary. Katz (1975) agreed but reiterated that publication activity nevertheless is a major variable. Perhaps experience should be regarded more as a result of successful publication activity as an 'active' variable. Clearly, publication success produces opportunity for years of experience to accumulate and thus is a variable that can be directly influenced, while experience is a 'passive,' resultant variable .

Tuckman and Hagemann (1976) found several variables involving scholarly activity, administration, service and experience to be significantly related to salary for groups of faculty in economics and in education. Outstanding teaching award receipt was not, but as measured, it may have been too abbreviated, similar to the variable used by Katz.

Tuckman, et al. (1977) analyzed data from 12,685 faculty in a national cross-section data pool. Teaching, in the form of receipt of an award or not, was not related at .05 to salary in five sub-groupings of disciplines, while publications, administration, and experience in general were (although least so for scholarly work in the biological sciences). Other

studies have shown similar relationships, with teaching much less related to salary than were other activity variables, especially research productivity and experience (Kasten, 1984; Marsh & Dillon, 1980; McLaughlin, et al. 1979; Tuckman, 1979).

An Econometrics Perspective. Econometrics-based ideas about research activity and teaching effectiveness in models of faculty reward systems have been devised. The reasoning used yields a different explanation for the apparent near zero correlation between these two 'predictor' variables. Allen (1980) used the findings from several of the studies reported here to argue that under the production conditions prevailing at major universities, these two 'goods' are jointly produced, with little conflict. The directly observable correlation between teaching and research outputs will be zero under these conditions. Needham (1982) also emphasized that, of the two variables, research is the better because it is operationally better defined and understood in output terms than is teaching . Measures of research productivity probably are better accepted than most measures of teaching effectiveness, especially those involving student appraisals of in-class experiences. Lima (1981) argued that any cross-sectional data on teaching effectiveness would result in near zero correlations, which indeed seems to be the case, as presented above. Cross-sectional research as reported above apparently is not likely to be fruitful, whereas longitudinal study of new entrants into the teaching/research profession might be.

Implications and Applications

What, then, seems to be among the reasonable general positions one might objectively adopt, without fleeing into 'it depends' equivocation or

'more research is needed' begging of the question?

1. The 29 studies comparing research productivity and perceived teaching effectiveness show clearly enough that the direct predictability of perceived teaching effectiveness from a knowledge of scholarly activity is nil or so small as to be useless when making individual decisions. In contrast, the 12 studies involving assessments of teaching effectiveness and research activity as variables influencing salary are more clear in findings (though perhaps not in the discursive interpretations of those findings). An assumption that doing research is good for teaching seems to be deeply ingrained in the value systems of higher education faculty, especially in university settings.
2. At least in the settings so far studied, research related productivity is substantially greater as a contributor to salary experience than is teaching effectiveness, as so far measured. Publication productivity will improve salary experience, especially in most university settings. Successful article writing will have the greatest influence in most instances.
3. Research activity, typically measured as numbers of articles, books, and the like, is not a generally valid index of teaching effectiveness, especially when the latter is expressed by heterogenous groups of students sampled in diverse courses pooled over several levels.
4. A 'calculus' in salary advancements exists favoring research productivity over apparent effective teaching such that unless a person is really poor at doing the former, average recognition is likely in most places, whereas the person must be unusually good at

the latter to have higher than average prospects of monetary recognition.

5. Making the reward for teaching both convincingly greater and more directly apparent to prospective faculty may be necessary, assuming selection committee members will value evidence of teaching potential when they see it (see Salthouse, et al., 1978).
6. Research or scholarly writing success, especially in the form of refereed articles, is almost everywhere valued and rewarded, though more so in research universities.
7. Actions should be taken in the doctorate preparing institutions to train students in the teaching component that, for most, will be an activity that they must do at least adequately, while continuing the preparation experiences that will provide a competitive opportunity to get at least one or two refereed articles published as early as possible.

Discussion

Selection.

"If an institution wants both scholars and teachers [in the same persons], it will have to select for both, realizing that the selection process remains a fragile one and on occasion they will get neither scholars nor teachers" (Dent and Lewis,1976, p. 15).

Recruitment of new faculty, especially from among the newly qualified applicant pool, is a hazardous venture in which the employer and the applicant have much at risk. The task is especially difficult when the sample is entirely or mostly composed of persons with no "track record" in either research or teaching. Given the apparent value system shared widely

among faculty members, applicants with any publication evidence would appear to have a substantial advantage. Thus, the press to be at least a co-author of one or more articles prior to job seeking is quite understandable. What information about teaching effectiveness would a selection committee take as having the weight related to potential for instructional success as article authorship is taken to predict for subsequent scholarly activity? Persons in doctorate programs who seek to enter higher education tenure track positions can glean few clues from the literature from which to 'improve their odds.'

Preparation.

Has preparation for teaching responsibilities been taken for granted? If three recent critiques of higher education are taken seriously, then attention to teaching capabilities may become imperative (Scully, 1984a, 1984b, 1985, with full texts in the respective issue of The Chronicle of Higher Education). If effective teaching is a trainable talent, it should be cultivated directly, and not presumed. Nor can it be safely thought of as a by-product of research knowledge and skill development.

Some Reflections.

Tuckman and Leahey (1975) estimated the value of first and later articles and various numbers of articles and books in an over-all career income experience. Their data indicate that articles are 'worth' more than books, and first articles are most valuable. Apparently this situation was known or suspected previously. Tullock (1973) noted that this marketplace probably discriminates against older faculty who publish. Paul and Rubin (1984) suggested that first articles are 'worth' more because the institution is buying early evidence predictive of long term productivity

regardless of the substantive content. Whereas doing good research may enhance one's status among one's peers, it probably will not be valued directly by undergraduate students generally. Possibly in a specialized course, and perhaps at the graduate level, student perceptions may be more positive. Student perceptions of teaching are not necessarily indicative of actual student learning. This relationship is another controversial one which has been discussed quite extensively for some time and about which various empirical findings have been presented. It was deemed to be outside the scope this investigation. Another controversial topic related to research activity was not addressed here -- how to weight multiple authorships, first author vs second and later author listing, and the like, when evaluating scholarly productivity.

Faculty (Jauch, 1976) and administrators (Boyes, et al. 1984) tend to support involvement in research, whereas students want faculty to know about current research, not necessarily to be doing it personally (Hammond, et al., 1969; McGrath, 1962; Muselle and Rusch,1968; Yamamoto and Dizney,1966). Faculty seem to assume that reading will be done in breadth as well as depth by the researcher/writer. Do 'non-publishers' read less in amount, or less discerningly, or less widely? Might they not read more ecumenically than their researcher colleagues? Does any truth reside in the oft repeated cliche that as one progresses in a discipline, one 'learns more and more about less and less'? In any event, we found no data about the reading investment and activity of faculty, whether researchers or not, related to teaching effectiveness.

Why do so many faculty support the assumption that doing research will produce more effective instruction? Skiff (1980) developed an

argument that faculty support publishing for its status value, as well as for its substantive contribution to a discipline. Higher education is a competitive environment, and keeping up with the field, that is to say at least some of one's peers, is done most directly and visibly through successful publishing. Not to publish is to risk being regarded as obsolete.

Research activity also has become a means of control over one's own work and one's own occupational existence. Research outcomes have an authority/power function, which teaching does not. Skiff (1980) also argued that the faculty member who seeks to be perceived as an effective teacher generally must appeal to a non-colleague constituency: "If teaching were the primary or the exclusive purpose of the university, the fate of faculty would be in the hands of those who evaluate teaching: students, administrators, and even parents" (p. 179).

Present conditions suggest to people in doctorate programs that they must emphasize research knowledge and skill development. Thus, a younger faculty person is faced with the task of attempting to initiate a program of scholarly writing, especially of articles for prestige, refereed journals, while simultaneously attempting to teach in some style and manner so as to be perceived as adequate by peers and administrative decision makers. Making the rewards for effective teaching both convincingly greater and more directly apparent to prospective faculty apparently will be necessary if people are to be induced to attend directly to developing teaching as a marketable knowledge and skill.

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